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REVIEWS

Geologia Elementar. Preparada com referencia especial aos Estudantes Brasileiros e á Geologia do Brazil. Por JOHN C. BRANNER. Segunda Edição, pp. 396, figs. 174. Francisco Alves e Cia, Rio de Janeiro, 1915.

Previous to the appearance of the first edition of *Geologia Elementar* in 1906, about the only textbooks in geology available to Brazilian students were those written in foreign languages and the Portuguese translation of an abbreviated text of De Lapparent, published in Rio de Janeiro in 1898, and a much earlier translation from the French which appeared in 1846. Such works, however, are founded to a large extent upon the geology of Europe and North America and thus fall short of being the most appropriate subject-matter for South American students whose greatest interest naturally centers in the phenomena of their own continent. References to familiar scenes and places are not only more impressive and instructive than citations from remote regions, but they stimulate direct observations on local formations and lead on to practical studies of home phenomena.

Recognizing the urgent need of a Brazilian textbook of geology for Brazilian students, Dr. Branner prepared this *Geologia Elementar* by drawing on the geology of Brazil as largely as possible for illustrative and descriptive matter. He was singularly qualified to do this by virtue of his very extensive field studies in that country. Few countries offer a richer field for selecting material illustrative of geologic processes than Brazil, even though great portions of it, in spite of the activity of the Brazilian survey, yet remain unexplored geologically. Its illustrative resources are attested by the success of this endeavor.

The book is divided into three sections: Part I, Dynamic Geology; Part II, Structural Geology; Part III, Historical Geology.

Part III, both on the physical side and on the biological, is almost entirely a history of the geology of Brazil. The faunas represented and discussed are, with the exception of the Jurassic, almost exclusively Brazilian. The work thus gives, in convenient form, a summary of what is known of the geological history of Brazil.

The first edition, written originally in English and translated into Portuguese by Dr. Antonio de Barros Barreto, appeared in 1906. The many additions which appear in this second edition were written directly in Portuguese by Dr. Branner, who, to his other accomplishments, adds a sufficient mastery of the Portuguese language to have become also the author of a Portuguese-English grammar which, like the *Geologia Elementar*, is recognized as a standard.

R. T. C.

Geologische Beobachtungen in Spitzbergen. Ergebnisse der W. Filsch-nerschen Vorexpedition nach Spitzbergen 1910. By PROFESSOR H. PHILIPP. *Ergänzungsheft Nr. 179 zu Petermanns Mitteilungen.* Gotha: Justus Perthes, 1914. Pp. 46, figs. 4.

The rocks exposed are of Jurassic and Triassic age. The former contain coal and fossiliferous beds carrying cyathophylloid corals. The interior of the island is an arctic desert. As in deserts of more temperate zones, the changes of temperature due to insolation are so great that the accumulation of scree is excessive. So much rubble falls that in some cases the mountains are completely girdled with débris even to their tops; so much so that the speed of further destruction of the mountain is greatly decreased. Built in this manner there are everywhere great débris terraces.

The west coast is bordered by a mountain chain which precipitates the moisture from the sea breezes; this makes the interior a true desert, a *hamada*. Gravel floors and dreikanter are characteristically developed. Deflation is marked, but no sand dunes are formed because the rock dust is carried onto bordering glaciers and deported. Vegetation is practically wanting; only a few valley bottoms, in the rôle of oases, become green during the short summer. The author calls this region an "arctic" desert, in distinction from the usual polar desert.

Generally the island is ice covered. The covering is controlled by the physiography; the conformity of the glacial capping to the underlying land surface is the characteristic of the typical Spitzbergen ice field. In different regions the climatic control gives rise to valley, plateau, or cap ice and slope glaciers, or to combinations of these. Slope ice forms troughs and kars. The slopes bordering the valley glacier are ice covered to the divide top. This slope ice works down the sides at right angles to the axis of the valley and to the flow of the valley glacier. It works headward by bergschrund action, while the valley